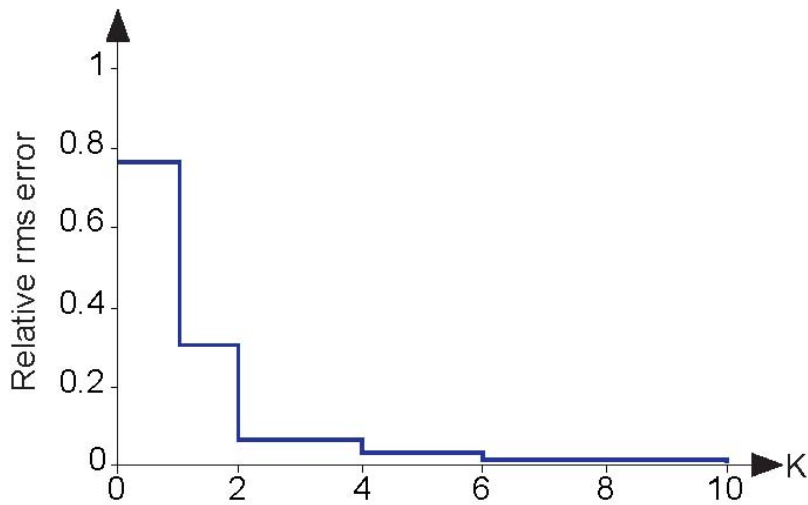Figure 4.6 shows how the error in the Fourier series for the half-wave rectified sinusoid decreases as more terms are incorporated. In particular, the use of four terms, as shown in the bottom plot of Figure 4.5, has a rms error (relative to the rms value of the signal) of about 3%. The Fourier series in this case converges quickly to the signal.

Figure 4.6 Approximation error for a half-wave rectified sinusoid : The rms error calculated according to (4.25) is shown as a function of the number of terms in the series for the half-wave rectified sinusoid. The error has been normalized by the rms value of the signal.

We can look at Figure 4.7 to see the power spectrum and the rms approximation error for the square wave.